

WHAT IS CLAIMED IS:

1. A method of manufacturing a semiconductor device,
2 comprising:
3 placing a gate structure over said substrate;
4 creating a halo implant in said substrate;
5 introducing a compensation implant in said substrate proximate
6 said halo implant at an angle abnormal to said substrate; and
7 forming a source/drain region proximate said compensation
8 implant, said angle reducing a capacitance associated with said
9 halo implant or said source/drain region.

2. The method as recited in Claim 1 wherein introducing a
2 compensation implant includes introducing a compensation implant at
3 an angle from about 5 degrees to about 75 degrees relative to
4 normal of said substrate.

3. The method as recited in Claim 2 wherein introducing a
2 compensation implant at an angle from about 5 degrees to about 75
3 degrees relative to normal of said substrate includes introducing
4 a compensation implant at an angle from about 15 degrees to about
5 35 degrees relative to normal of said substrate.

4. The method as recited in Claim 1 wherein introducing a

2 compensation implant includes introducing a compensation implant
3 using a dopant dose ranging from about $1E13$ atoms/cm² to about $1E14$
4 atoms/cm².

5. The method as recited in Claim 1 wherein said
2 compensation implant forms a dopant gradient between said halo
3 implant and said source/drain region, thereby reducing said
4 capacitance.

6. The method as recited in Claim 1 wherein said introducing
2 and said forming includes introducing and forming using a similar
3 type dopant and said creating includes creating using an opposite
4 type dopant.

7. The method as recited in Claim 1 wherein said
2 source/drain region includes a lightly doped source/drain implant
3 and a heavily doped source/drain implant.

8. The method as recited in Claim 1 further including
2 forming gate sidewall spacers along sides of said gate structure,
3 wherein said compensation implant is located at least about 10 nm
4 under a footprint created by said gate sidewall spacers.

9. The method as recited in Claim 8 wherein said

2 compensation implant is located from about 10 nm to about 200 nm
3 under said footprint created by said gate sidewall spacers.

10. The method as recited in Claim 1 wherein said creating
2 occurs before said introducing and said introducing occurs before
3 said forming.

11. The method as recited in Claim 1 wherein introducing a
2 compensation implant includes creating a counterdoped region in
3 said halo implant.

12. The method as recited in Claim 1 wherein said
2 counterdoped region has a dopant concentration greater than about
3 $1/3$ of a dopant concentration of said halo implant.

13. The method as recited in Claim 1 wherein introducing a
2 compensation implant includes introducing a first compensation
3 implant and further including introducing a second compensation
4 implant in said substrate proximate said halo implant at an angle
5 substantially normal to said substrate.

14. The method as recited in Claim 13 wherein said
2 introducing a first compensation implant and said introducing a
3 second compensation implant occur simultaneously.

15. A semiconductor device manufactured by the method of
2 Claim 1.

16. A method of manufacturing an integrated circuit,
comprising:
creating a semiconductor device, including;
placing a gate structure over said substrate;
creating a halo implant in said substrate;
introducing a compensation implant in said substrate
proximate said halo implant at an angle abnormal to said substrate;
and
forming a source/drain region proximate said compensation
implant, said angle reducing a capacitance associated with said
halo implant or said source/drain region; and
constructing an interlevel dielectric layer located over said
semiconductor device and having interconnects located therein,
wherein said interconnects contact said semiconductor device to
form an operational integrated circuit.

17. The method as recited in Claim 16 wherein introducing a
compensation implant includes introducing a compensation implant at
an angle from about 15 degrees to about 35 degrees relative to
normal of said substrate.

18. The method as recited in Claim 16 wherein introducing a
compensation implant includes introducing a compensation implant
using a dopant dose ranging from about $1E13$ atoms/cm² to about $1E14$

4 atoms/cm².

19. The method as recited in Claim 16 wherein said
2 introducing and said forming includes introducing and forming using
3 a similar type dopant and said creating includes creating using an
4 opposite type dopant.

20. The method as recited in Claim 16 wherein said
2 source/drain region includes a lightly doped source/drain implant
3 and a heavily doped source/drain implant.

21. The method as recited in Claim 16 further including
2 forming gate sidewall spacers along sides of said gate structure,
3 wherein said compensation implant is located at least about 10 nm
4 under a footprint created by said gate sidewall spacers.

22. The method as recited in Claim 1 wherein introducing a
2 compensation implant includes creating a counterdoped region in
3 said halo implant.

23. The method as recited in Claim 1 wherein said
2 counterdoped region has a dopant concentration greater than about
3 1/3 of a dopant concentration of said halo implant.

24. The method as recited in Claim 1 wherein introducing a
2 compensation implant includes introducing a first compensation
3 implant and further including introducing a second compensation
4 implant in said substrate proximate said halo implant at an angle
5 substantially normal to said substrate.

25. The method as recited in Claim 24 wherein said
2 introducing a first compensation implant and said introducing a
3 second compensation implant occur simultaneously.

26. The method as recited in Claim 16 further including
2 forming a second semiconductor device proximate said semiconductor
3 device, wherein said second semiconductor device is selected from
4 the group of devices consisting of:
5 a MOS device;
6 a bipolar device;
7 an inductor;
8 a resistor;
9 an optical device; and
10 a micro-electro-mechanical system (MEMS) device.

27. A semiconductor device, comprising;
2 a substrate having a gate structure located thereover;
3 sidewall spacers located along sides of said gate structure;
4 a halo implant located in said substrate;
5 a compensation implant located in said substrate proximate
6 said halo implant and at least about 10 nm under a footprint
7 created by said gate sidewall spacers; and
8 a source/drain region located proximate said compensation
9 implant.

28. The semiconductor device as recited in Claim 19 wherein
2 said compensation implant is located from about 10 nm to about 200
3 nm under said footprint created by said gate sidewall spacers.